

ABSTRACT OF THE DISCLOSURE

The present invention provides a gas discharge laser having at least one long-life elongated electrode for producing at least 12 billion high voltage electric discharges in a fluorine containing laser gas. In a preferred embodiment at least one of the electrodes is comprised of a first material having a relatively low anode erosion rate and a second anode material having a relatively higher anode erosion rate. The first anode material is positioned at a desired anode discharge region of the electrode. The second anode material is located adjacent to the first anode material along at least two long sides of the first material. During operation of the laser erosion occurs on both materials but the higher erosion rate of the second material assures that any tendency of the discharge to spread onto the second material will quickly erode away the second material enough to stop the spread of the discharge. In a preferred embodiment the anode is as described above and the cathode is also a two-material electrode with the first material at the discharge region being C26000 brass and the second material being C36000 brass. A pulse power system provides electrical pulses at rates of at least 1 KHz. A blower circulates laser gas between the electrodes at speeds of at least 5 m/s and a heat exchanger is provided to remove heat produced by the blower and the discharges.